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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/801,969	03/16/2004	George Nerubenko	SMB-7038	2364

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EXAMINER

NGUYEN, XUAN LAN T

ART UNIT PAPER NUMBER

3683

DATE MAILED: 08/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/801,969	Applicant(s) NERUBENKO, GEORGE	
	Examiner Lan Nguyen	Art Unit 3683	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 2-10 and 22-27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 11-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3/16/04 & 6/29/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Species IE (figure 7) in the reply filed on 5/26/05 is acknowledged.
2. Upon further consideration, it is determined that invention II is a part of species IE (figure 7); since the methods disclosed in figures 8 and 9 are only for use with species IE of figure 7 and not with any other species. Claims 1 and 11-21 are determined to pertain to the elected species now comprises figures 7-9.
3. Based on the above determination, the species in this application are now listed as followed:

- Species A figure 2
- Species B figures 3, 4
- Species C figures 5, 5A
- Species D figure 6
- Species E figures 7-9

Specification

4. In the specification, page 17, line 20 should be -- springs 752) that effect oscillation of springs 712 about the hub 705. --

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1 and 14-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Re: claim 1, line 5 states "one controlling damping element". It is believed that it should be --one controllable damping element--; since damping element 770 is being controlled by the ECU 896. Damping element 770 cannot perform the task of controlling; but is being controllable by ECU 896.

Re: claims 14-21, claim 14 states "A method for damping torsional vibrations of a rotating shaft wherein said shaft includes a hub, a mass physically coupled to said hub via a first spring and coupled to said hub via a second spring and electromagnetic bond". It is unclear if Applicant intends to claim mass 714 or mass 750 because: (1) mass 714 is physically coupled to said hub 705 via a first spring 712; (2) mass 750 is coupled to the hub 705 via a second spring 752 and an electromagnet bond 770; and none of mass 714 and mass 750 is physically coupled to said hub via a first spring and coupled to said hub via a second spring and electromagnetic bond. To further prosecution, claim 14 is being treated as having the preamble -- A method for damping torsional vibrations of a rotating shaft wherein said shaft includes a hub, a mass physically coupled to said hub via a first spring and said mass coupled to a second spring via an electromagnetic bond --.

Re: claim 17, the phrase "equal to -90 0" is believed to comprise typographical errors.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 11, 12, 14 and 17-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Tossman et al (USP 3,637,169).

Re: claim 1, Tossman et al. show a damper for mitigating torsional vibrations of a shaft 21, rotating with an angular velocity about a longitudinal axis 11, and rotating perpendicular to a plane of rotation, as in the present invention, comprising: at least one passive damping element 35, one controlling damping element 14, 15.

Re: claim 11, Tossman et al. show a damper for reducing torsional vibrations of a rotating shaft, as in the present invention, said damper comprising: a first spring 32, a second spring 14, 15, a mass 35 physically coupled to said first spring and electromagnetically coupled to said second spring for oscillation having a frequency, wherein said oscillation dampens said torsional vibrations of said shaft that correspond to said frequency, accelerometers coupled to the mass and the shaft for detecting the relative motion of said mass and said shaft, accelerators are not shown but inherent since Tossman uses the angular momentum, column 3, line 4, and angular

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displacement, column 3, lines 64 and 65 in the controlling scheme, a current generator for adjusting an electromagnetic bond hereby the second spring is coupled to the mass, a current generator is not shown but inherent since in column 4, lines 6 and 7, Tossman discloses that the current is fed to the coils 18, a computer coupled to said accelerometers and said current generator for detecting at least one undesired torsional vibration, determining a corresponding dampening spring stiffness improvement, and signaling current generator to adjust current in order to implement said improvement, see column 4, lines 6-16.

Re: claim 12, Tossman shows through out the disclosure that frequency and amplitude of said mass and said shaft oscillation and phase differential between mass and said shaft are calculated in order to damp the rotational frequency of the spacecraft.

Re: claim 14, Tossman et al. show a method for damping torsional vibrations of a rotating shaft 21 wherein said shaft includes a hub 27, a mass 35 physically coupled to said hub via a first spring 32 and said mass coupled to a second spring 14, 15 via an electromagnetic bond, said method comprising: (i) oscillating said mass angularly with respect to said hub in a manner that absorbs energy with a resonance related to the total effective spring constants of the first and second springs, as shown in figures 1 and 2, (ii) identifying undesired harmonic motion in said mass relative to said hub, see column 2, lines 57-62, (iii) calculating applied current changes that, when applied by a current generator to said electromagnetic bond, see column 4, lines 6-16, change the total effective spring constant and improve dampening of the detected undesired harmonic motion, and (iv) applying said current changes, see column 4, lines 6-16.

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Note that the claimed feature "current changes" has been treated broadly in that a plurality of changes of the current from being on to being off is considered to be "current changes".

Re: claim 17, Tossman shows in column 4, lines 6-16 that when electromagnets 14, 15 are energized, they quickly dampen the vibration (i.e. harmonic force with a frequency equal to frequency of actual external force).

Re: claims 18-20, even though Tossman does not show the transducer, accelerometers and frequency detector, they are considered to be inherent in Tossman's system since Tossman discloses the use of angular momentum, column 3, line 4, angular displacement, column 3, lines 64 and 65, rotating frequency, column 3, line 6, in the controlling scheme as described in column 4, lines 6-16 wherein the coils 18 are energized based on the changes in the angular momentum to dampen rotational vibration.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 13 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tossman et al. in view of Wang et al. (USP 6,598,717).

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Tossman's damper and method, as rejected in claims 11 and 14 respectively, lack the spectrum analyzer as claimed. Wang et al. teach the use of a spectrum analyzer 130 in figure 10 as an old and well-known device for signal processing. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Tossman's damper and method to have included a spectrum analyzer as taught by Wang since spectrum analyzers are old and well known devices for signal processing.

Allowable Subject Matter

11. Claims 15 and 16 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Meinke et al. shows various mass dampers. Wu et al. show a mass damper using a spectrum analyzer. Gurov et al. show a mass damper using electromagnet. Karita et al. show a mass damper.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lan Nguyen whose telephone number is (571) 272-7121. The examiner can normally be reached on M-F, 8 to 4:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Marmor can be reached on (571) 272-7095. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lan Nguyen
Primary Examiner
Art Unit 3683


8/9/05